

CLAIMS:

1. A silencer for a passage comprising:

a soft acoustic section soft in acoustics where a sound pressure at an inner wall surface of the passage becomes

5 approximately zero; and

a non-soft acoustic section where the sound pressure at the inner wall surface of the passage does not become zero,

wherein said soft acoustic section and said non-soft acoustic section are arranged alternately on the inner wall surface of the passage along a longitudinal direction of the passage over an approximately half or greater of a wavelength of a sound wave to be silenced.

2. A silencer for a passage comprising:

15 a partition wall for dividing the passage such that an opening width becomes a half or smaller of a wavelength of a sound wave to be silenced;

a soft acoustic section soft in acoustics where a sound pressure at a wall surface becomes approximately zero; and

20 a non-soft acoustic section where the sound pressure at the wall surface does not become zero,

wherein said soft acoustic section and said non-soft acoustic section are arranged alternately on both side wall surfaces of the partition wall along a longitudinal direction of the passage over an approximately half or greater of the wavelength of the sound wave to be silenced.

3. The silencer for passage according to claim 1 or claim 2, wherein said soft acoustic section is formed of an acoustic pipe having a length from an open end disposed on a wall surface to a closed end equal to  $1/4$  of the wavelength of the sound wave to be silenced.

4. The silencer for a passage according to claim 3, wherein said acoustic pipe has the open end thereof covered with a film.

5. The silencer for passage according to claim 3 or claim 4, wherein said soft acoustic section is formed by arranging the open end of the acoustic pipe on one wall surface of the partition wall, and said non-soft acoustic section is formed by arranging the closed end of the acoustic pipe on the other wall surface.

6. The silencer for passage according to any one of claims 1 to 5, wherein said non-soft acoustic section is formed of a sound absorbing member reducing the sound pressure.

7. A silencer for a passage having a rectangular cross section, comprising:

first silencing means mounted on one of two pairs of inner wall surfaces of the passage facing oppositely with each other; and

second silencing means having silencing property different from that of the first silencing means and mounted on the other of the two pairs of the inner wall surfaces,

wherein said first silencing means is configured such that a soft acoustic section soft in acoustics where a sound pressure at the inner wall surfaces of the passage becomes approximately zero and a non-soft acoustic section where the sound pressure at the inner wall surfaces of the passage does not become zero are alternately arranged along a longitudinal direction of the passage over an approximately half or greater of a wavelength of a sound wave to be silenced.

8. A silencer for a passage having a rectangular cross section, comprising:

a partition wall for dividing the passage such that an opening width becomes a half or smaller of a wavelength of a sound wave to be silenced so as to form a plurality of miniaturized passages having a rectangular cross section inside  
5 the passage;

first silencing means mounted on one of two pairs of inner wall surfaces of the miniaturized passages facing oppositely; and

second silencing means having silencing property different  
10 from that of the first silencing means and mounted on the other of the two pairs of the inner wall surfaces,

wherein said first silencing means is configured such that a soft acoustic section soft in acoustics where a sound pressure at the inner wall surfaces becomes approximately zero and a non-  
15 soft acoustic section where the sound pressure at the inner wall surfaces does not become zero are alternately arranged along a longitudinal direction of the passage over an approximately half or greater of the wavelength of the sound wave to be silenced.

20 9. The silencer for a passage according to claim 7 or claim 8, wherein said soft acoustic section is formed of an acoustic pipe having a length from an open end disposed on the inner wall surfaces to a closed end equal to  $1/4$  of the wavelength of the sound wave to be silenced.

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10. The silencer for a passage according to claim 9, wherein said acoustic pipe has the open end covered with a film.

11. The silencer for a passage according to claim 9 or  
30 claim 10, wherein said soft acoustic section is formed by arranging the open end of the acoustic pipe on one wall surface of the partition wall, and said non-soft acoustic section is formed by arranging the closed end of the acoustic pipe on the other wall surface.

12. The silencer for passage according to any one of claims  
7 to 11, wherein said second silencing means includes a sound  
absorbing section formed on the inner wall surfaces for reducing  
5 the sound pressure of the sound wave to be silenced.